effect (To date). The same logic as per discussed above for Min/Max Quantity may apply.

Note that the user may delete a particular Validity Rule that has been automatically generated but cannot add Validity Rules for a formula use that has not been defined at formula level.

A recipe is an entity that describes the production procedure for one or many products (co-products).

Because different parts of an enterprise may need information about the manufacture of a product in varying degrees of specificity, embodiments of the present invention may provide the ability to specify a recipe with the information that is appropriate for its specific purpose. For example in accordance with ISA S88.01 "General" recipes are recipes that are created at the enterprise level to provide a "global" view of the manufacture of a product. There is no specific reference to the equipment available at a particular site. Recipe Type is a user-defined attribute that allows identification of the purpose of a recipe.

Depending on the company requirements, different categories of recipes may exist. In defining types, users can indicate if this type of recipe can be used for production. For example, if the enterprise decides to implement ISA S88.01 standards, a recipe type "Master" will be created and the "Production use" indicator is checked as shown in recipe type maintenance window 1100 in Figure 11, according to an embodiment of the present invention.

Recipe type maintenance window 1100 may include type window 1110 that displays a list of recipe types and descriptions. A user may select a type for the selected recipe.

Recipe type maintenance window 1100 may further include routing type association window 1120 as shown in Figure 11. Routing type association window 1120 allows a user to associate routings and recipe types.

Embodiments of the present invention may give the user the ability to define which routing type can be used to build a particular recipe. Based on this example, users may only be allowed to create site recipe using routings of type "Site." A practical use of this would be to prevent the user from creating a "Master" Recipe using a Routing for which no actual resources are specified. Also, the ability to specify the hierarchy and interdependence between recipe types may be provided.

This allows embodiments of the present invention to control the generation of recipes in a controlled manner pre-determined by the enterprise. For example, an enterprise implementing the three types of recipes as described by ISA S88.01 namely General, Site and Master recipes would setup the type dependencies so that embodiments of the present invention may not allow the creation of a Site recipe from a Master recipe.

Figure 12 depicts a recipe type dependencies maintenance display 1200, according to an embodiment of the present invention. Display 1200 may include recipe type dependencies window 1220 which allows a user to assign an allowable recipe type to a selected recipe.

As shown in Figure 12, a recipe of type "Site" may only be generated from a recipe of type "General". The flexibility of this architecture accommodates ISA S88.01 standards that advocate the use of three types of recipes: General Recipes, Site Recipes and Master Recipes, as well as the Standardization Association for Measurement and Control in Process Industries (NAMUR) recommendations to work with two generations of recipes, Source Recipes and Basis Recipes.

Figure 14 illustrates circuitry of computer system 1400, which may form a platform for the implementation of embodiments of the present invention. Computer system 1400 includes an address/data bus 1450 for communicating information, a central processor 1405 functionally coupled with the bus for processing information and instructions, a volatile memory 1415 (e.g., random access memory RAM) coupled with the bus 1450 for storing information and instructions for the central processor 1405 and a non-volatile memory 1410 (e.g., read only memory ROM) coupled with the bus 1450 for storing static information and instructions for the processor 1405. Computer system 1400 also optionally includes a changeable, non-volatile memory 1420 (e.g., flash) for storing information and instructions for the central processor 1405, which can be updated after the manufacture of system 1400.

Computer system 1400 also optionally includes a data storage device 1435 (e.g., a rotating magnetic disk) coupled with the bus 1450 for storing information and instructions.